REMARKS

The abstract has been amended so that it conforms with the requirements of the U.S. Patent Office. The specification has been amended in order to correct formal, grammatical and idiomatic errors contained therein. No new matter has been added.

Claims 1 and 2 have been rejected under 35 USC 103(a) as being unpatentable over JP 10-306338 (JP '338). Applicants respectfully traverse this ground of rejection and urge reconsideration in light of the following comments.

The presently claimed invention is directed to a high-strength aluminum alloy extruded product which exhibits excellent corrosion resistance and has a recrystallized structure with an average grain size of no more than 500 μm. The aluminum alloy extruded product is formed from an aluminum alloy comprising, in mass %, 0.6 to 1.2% silicon, 0.8 to 1.2% magnesium, 1.3 to 2.1% copper, 0.04 to 0.35% chromium and no more than 0.05% manganese as an impurity, with the balance being aluminum and unavoidable impurities. The silicon, magnesium and copper contents must also satisfy the following relationships:

$$3\% \leq Si\% + Mg\% + Cu\% \leq 4\% \quad (1)$$

$$Mg\% \leq 1.7 \times Si\% \quad (2)$$

$$Mg\% + Si\% \leq 2.7\% \quad (3)$$

$$Cu\%/2 \leq Mg\% \leq (Cu\%/2) + 0.6\% \quad (4).$$

The present invention was arrived at after extensive experimentation to provide a corrosion-resistant, high-strength aluminum alloy extruded product which exhibits stable extrudability based on the alloy composition and extrusion conditions. That is, the present inventors discovered that an aluminum alloy extruded product having a recrystallized structure with an average grain size of 500 μm or less has superior physical properties to comparative aluminum alloy extruded products and can be obtained under specified manufacturing conditions. It is respectfully submitted that

the prior art cited by the Examiner does not disclose the presently claimed invention.

JP '338 discloses a hollow extruded material which consists of, by weight percent, 0.5 to 1.5% silicon, 0.9 to 1.6% magnesium, 1.2 to 2.5% copper, 0.02 to 0.4% chromium and the balance being aluminum. As admitted by the Examiner in the outstanding Office Action, this reference has no disclosure with respect to the microstructural details of the alloys shown there. In JP' 338, hollow extruded products are produced by homogenizing a billet of the aluminum alloy at a temperature of less than the melting point setting the billet temperature at from 350-550°C at the time of extrusion and performing that extrusion molding using a porthole die or a spider die at a specified extrusion rate. This reference has no disclosure with respect to the inventive process steps when extruding the aluminum alloy into a solid product or a hollow product through the use of a porthole die or a bridge die. Since these steps are critical in obtaining the presently claimed invention, it is respectfully submitted that the presently claimed invention is patentably distinguishable thereover.

In the present specification, Table 1 discloses alloys A through N which cover the full range of the components required by the aluminum alloy of the present invention. In contrast thereto, Table 3 in the present specification contains comparative alloys within the scope of JP '338 but outside of the scope of the present claims. That is, Alloy O in Table 3 contains 1.3% silicon which is greater than the upper limit of silicon content contained in the present claims while Alloy R contains 0.5% silicon which is less than the minimum silicon content required in the present claims. Alloy P contains 1.4% magnesium which is greater than the magnesium content allowed by the present claims and Alloy S contains 0.7% magnesium which is less than the lower limit of magnesium content permitted by the present claims. Alloy Q contains 2.2% copper which is greater than the copper content

allowed by the present claims while Alloy T contains 1.2% copper which is less than the lower limit of copper content required by the present claims. Alloy U contains manganese in an amount exceeding that allowed in the present claims and Alloys V and W contain chromium in an amount outside of the scope of the present claims. As shown in Table 4 of the present specification, these comparative alloys either exhibited an inferior corrosion resistance due to high silicon content, high magnesium content or high copper content or an inferior strength due to low silicon content, low magnesium content and low copper content. In Specimen No. 21, a coarse intermetallic compound was formed due to a high manganese content, Specimen No. 22 exhibited poor corrosion resistance due to low chromium content and Specimen No. 23 developed a coarse intermetallic compound due to the high chromium content so that the grains were not uniform, even though the comparative alloys were subject to the same manufacturing conditions as that of Alloys A through N. In Table 3, Alloys X, Y, Z, AA and BB did not satisfy the claimed relationships. As shown in Table 4, these alloys also exhibited inferior properties.

Example 2 shows an aluminum alloy A within the scope of the present claims being manufactured according to the present invention while in Comparative Example 2, the identical aluminum alloy A was prepared in a manner outside of the scope of the present claims but within the disclosure of JP '338. A comparison of Table 5 and Table 6 illustrates that the preparation of the comparative aluminum alloy A resulted in the aluminum alloy having inferior properties than that of the presently claimed invention. In Example 3, the aluminum alloys having the compositions disclosed in Table 1 are formed into a tubular product according to the present invention. In contrast thereto, in Comparative Example 3, comparative aluminum alloys in Table 3 were prepared under the same conditions as that of Example 1. As shown in Table 8, the

comparative aluminum alloys all exhibited inferior properties to that of the present invention.

In Example 4, the aluminum alloy composition according to the present invention was formed into an extruded tubular product in a manner required by the present invention while in Comparative Example 4, the identical aluminum alloy composition was extruded into a product according to the disclosure of JP '338. As shown in Table 10, the aluminum alloy prepared according to JP '338 exhibited inferior properties. This is clearly unexpected in light of the disclosure of JP '338 and patentably distinguishes the presently claimed invention thereover.

Reconsideration of the present application and the passing of it to issue is respectfully solicited.

Respectfully submitted,

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